REMARKS

The claims have been amended to address the various objections and rejections raised by the Examiner. More particularly, claim 18 has been canceled, thus rendering moot the objection to that claim. Additionally, independent claim 11 has been canceled in favor of new independent claim 26 which positively recites the method steps. Claim 26 also has been amended to clarify the invention and better distinguish the invention from the prior art.

Turning to the art rejections, and considering first the rejection of claims 11, 14, 15, 18, 23 and 24 as being anticipated by Chow et al., as noted *supra*, claims 11 and 18 have been canceled. New independent claim 26 cannot said to be anticipated by Chow et al. New independent claim 26 requires that the hafnium vapor is condensed without ion bombardment on the substrate under oxygen while maintaining the substrate at ambient temperature. Chow et al. nowhere teaches or suggests the importance of maintaining the substrated as ambient temperature as required by independent claim 26. Moreover, this distinction is more than merely academic. As taught by Applicants' specification, with a conventional reactive evaporation deposition process, there is a progressive rise in the temperature of the substrate which may reach 100-200°C (see the paragraph bridging paragraphs 16-17 of the specification and the last paragraph on page 20 of the specification). These increased substrate temperatures result in deposits having higher densities and defects. Thus, neither claim 26 nor any of the claims directly or indirectly thereon can be said to be anticipated by Chow et al.

Turning to the rejection of claims 11-19, 21, 23 and 24 as being obvious from Kihara et al. in view of Chow et al., as note *supra*, claims 11 and 18 have been canceled. It is submitted that new independent claim 26, and the several claims dependent thereon cannot be said to be obvious from Kihara et al. in view of Chow et al.

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In the rejection, the Examiner states that Kihara et al. does not specifically teach or suggest heating the substrate or actively "imparting energy" to the substrate during the deposition process, and on this basis, the Examiner concludes that Kihara et al. perform their process "without energy input to the substrate". In making this suggestion, the Examiner ignores the heat build-up inherent in the deposition process. Even assuming *arguendo*, Kihara et al. is as the Examiner suggests, Kihara et al. fails to teach or suggest the criticality of maintaining the substrate at ambient temperature as required by Applicants' independent claim 26.

Moreover, Kihara et al. is an entirely different process. Kihara et al. is forming highly hydrated hafnium oxide by reacting in a water vapor atmosphere. Applicants' claimed invention requires reactive evaporation of metallic hafnium under oxygen. The Examiner appears to acknowledge that Kihara et al. involves a different source material. However, the Examiner takes the position that one skilled in the art reasonably expect to obtain similar success results by substituting source materials. Certainly there is no teaching or suggestion within the four corners of Kihara et al. and Chow et al. that permits the Examiner to make this leap. Indeed, there is no motivation contained within Kihara et al. and Chow et al. which suggests to one skilled in the art to substitute source materials. It is therefore submitted the Examiner has applied impermissible hindsight and is applying the teachings of the present invention to the prior art to make out a case for obviousness. Accordingly, independent claim 26 and the several claims directly or indirectly dependent thereon cannot be said to be obvious from Kihara et al. taken with Chow et al.

Turning to the rejection of claims 14, 15, 21 and 24 as obvious from Kihara et al. in view of Chow et al. and further in view of Waldorf et al., claims 14, 15, 21 and 24 are directly

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or indirectly dependent on claim 26. The deficiencies of Kihara et al. and Chow et al. vis-à-vis claim 26 are discussed above. It is not seen that Waldorf et al. supplies the missing teachings to Kihara et al. and Chow et al. to achieve or render obvious claim 26 or any of the claims dependent thereon. Waldorf et al. has been cited as teaching density of the deposited hafnium oxide layer may be controlled by modifying process parameters such as substrate temperature. Even assuming *arguendo* though Waldorf et al. is as the Examiner suggests, there is no teaching or suggestion contained within the four corners of Waldorf et al. of the criticality of maintaining substrate temperature at ambient as required by Applicants' independent claim 26. Accordingly, Waldorf et al. cannot be said to supply the missing teachings to Kihara et al. and Chow et al. to achieve or render obvious Applicants' claim 26 or any of the claims dependent thereon.

Turning to the rejection of claims 11-25 as obvious from Tsujimura et al. in view of Chow et al. as noted *supra*, claims 11-18 have been canceled. As to the remaining claims, the Examiner cites Tsujimura et al. as teaching vacuum deposition of hafnium oxide on a substrate kept at temperatures as low as 20°C. Actually in Tsujimura et al., deposition is not made by evaporation as in the claimed invention but by magnetron sputtering, i.e., that a plasma is accelerated toward the source. Consequently, the species ejected from the source and then condensed on the substrate are energetic species, whereby a relatively dense and crystalline material is obtained (contrary to the amorphous material of the claimed invention). Thus, contrary to the claimed invention, condensing is done under ion bombardment of the plasma and of the ejected species.

Furthermore, Tsujimura does not teach or suggest maintaining the substrate at ambient temperature in order to obtain a given quality of the hafnium layer. Rather, Tsujimura

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maintains the substrate at a temperature of from 20°C to 150°C (this is not ambient temperature) reportedly in order to avoid damaging of the crystal on which the layer is deposed because of the difference between the thermal dilatation coefficients of the crystal and of this layer, which will induce damaging of the substrate when combined with a too high temperature (higher than 150°C).

The Examiner acknowledges that Tsujimura et al. fails to teach that the hafnium oxide layer is amorphous. However, the Examiner points to Chow et al. as supplying this missing teaching. It is submitted the Examiner is applying impermissible hindsight and is applying the teachings of the present invention to Tsujimura et al. and Chow et al. to achieve the instant claimed invention. The primary reference Tsujimura et al. nowhere teaches or suggests that the deposited hafnium oxide material is amorphous. Indeed, to the contrary, the whole import of Tsujimura et al. is to produce high quality crystal materials, not amorphous materials. Thus, no combination of Tsujimura et al. and Chow et al. reasonably could be said to achieve or render obvious claim 26 or any of the claims dependent thereon.

Turning to the rejection of claims 14, 15, 21, 22, 24 and 25 as obvious from Tsujimura et al. in view of Chow et al. and further in view of Waldorf et al., claims 14, 15, 21, 22, 24 and 25 are directly or indirectly dependent on new claim 26. The deficiencies of Tsujimura et al. and Chow et al. vis-à-vis claim 26 are discussed above. Waldorf et al. does not supply the missing teachings. As noted *supra*, there is nothing within the four corners of Waldorf et al. of the criticality of maintaining the substrate temperature at ambient. Accordingly, no combination of Tsujimura et al., Chow et al. and Waldorf et al. reasonably could be said to achieve or render obvious any of Applicants' claims.

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Having dealt with all the objections raised by the Examiner, the Application is believed to be in order for allowance. Early and favorable action are respectfully requested.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account Number 08-1391.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on August 18, 2005, at Tucson, Arizona.

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